

WHAT IS CLAIMED IS:

1 1. An optical scanner for deflecting a plurality of light beams at a given
2 wavelength λ from a light source towards a surface to be scanned, said scanner
3 including at least one optical element having a surface which reflects said light
4 beams, said surface comprising a thin film in which the reflectance of s-
5 polarized light at said given wavelength and p-polarized light at said given
6 wavelength differ by no more than 3.0% over an incidence angle in the range of
7 0-60°.

1 2. The optical scanner of claim 1 wherein said difference is no greater
2 than 1.9%.

1 3. The optical scanner of claim 2 wherein said thin film comprises a
2 first, outermost layer of SiO_2 , a second layer of TiO_2 , and a third layer of SiO_2 ,
3 and wherein the reflectance of said second layer is higher than the reflectance
4 of each of said first and third layers.

1 4. The optical scanner of claim 1 wherein said difference is no greater
2 than 0.16%.

1 5. The optical scanner of claim 4 wherein said thin film comprises a
2 layer of MgF_2 having a thickness less than 0.25λ .

1 6. The optical scanner of claim 5 wherein said thickness is about
2 0.22λ .

1 7. An optical scanner for deflecting a plurality of light beams at a give
2 wavelength λ from a light source towards a surface to be scanned, said scanner
3 including at least one optical element having a surface through which said light
4 beams are transmitted, said surface comprising a thin film in which the
5 refelctance of s-polarized light at said given wavelength and p-polarized light at

6 said given wavelength differ by no more than 3.0% over an incidence angle in
7 the range of 0-60°.

1 8. The optical scanner of claim 7 wherein said difference is no greater
2 than 0.19%.

1 9. The optical scanner of claim 8 wherein said thin film comprises a
2 first, outermost layer of MgF_2 , a second layer of ZrO_2 , and a third layer of Al_2O_3 .

1 10. The optical scanner of claim 9 wherein the reflectance of said
2 second layer is greater than the reflectance of each of said first and third layers.

1 11. The optical scanner of claim 9 wherein said second layer has a
2 thickness less than 0.50λ .

1 12. The optical scanner of claim 11 wherein said thickness is about
2 0.45λ .

1 13. An optical scanner comprising:
2 a light source for emitting a plurality of light beams in which a
3 polarization direction of at least one of the light beams is different from
4 polarization directions of the other light beams;
5 a deflector for deflecting the plurality of the light beams emitted from the
6 light source to scan the light beams over a surface to be scanned; and
7 an optical surface provided between the light source and said surface to
8 be scanned in the optical paths of the light beams, the optical surface having a
9 reflectance for s-polarized light and a reflectance for p-polarized light that are
10 substantially the same at a predetermined incident angle to the optical surface.

1 14. The optical scanner of claim 13, wherein said optical surface is
2 provided on a reflection-type optical element.

1 16. The optical scanner of claim 14, wherein said optical surface is
2 provided on a mirror located between the light source and the deflector.

1 17. The optical scanner of claim 14, wherein said optical surface is
2 provided on an imaging mirror.

1 18. The optical scanner of claim 13, wherein said optical surface is
2 provided on a transmission-type optical element.

1 19. The optical scanner of claim 18, wherein said optical surface is
2 provided on a imaging lens.

1 20. The optical scanner of claim 18, wherein said optical surface is
2 provided on a glass window.

1 21. The optical scanner of claim 18, wherein said optical surface is
2 provided on a collimator lens.

1 22. The optical scanner of claim 18, wherein said optical surface is
2 provided on a cylindrical lens.

23. The optical scanner of claim 13, wherein the difference between the reflectance for s-polarized light and the reflectance for p-polarized light is not more than 3%.